OBJECTIVE SHEET

WORKPLACE SAFETY AND HEALTH 3

INTRODUCTION

Almost every workplace can contain hazards and unsafe conditions. People can also do things in a way that can lead to injury and even death. Every year, millions of people suffer non-fatal workplace injuries. Thousands of people in the United States die every year from injuries suffered on the job.

Workplace accidents can range from minor cuts to potentially life-threatening situations. The key to handling such an accident is your ability to analyze the situation and decide what must be done. The information and skills covered in this unit can help you respond appropriately to accidents that may occur.

FOCUS ASSIGNMENTS

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1. Silicosis is a disabling, nonreversible and sometimes fatal lung disease. It is caused by overexposure to crystalline silica inhaled from the air. According to OSHA, more than one million workers in America are exposed to crystalline silica. More than 250 die from silicosis each year. Silicosis cannot be cured, but it can be prevented.

2. According to OSHA, the top 10 causes of workplace injuries and illnesses include: overexertion (including lifting); contact with objects and equipment; fall to same or lower level; repetitive motion; exposure to harmful substances; transportation accidents; slips, trips, loss of balance (without falling); assaults and violent acts; and fires and explosions.

3. Think about the illnesses and injuries in (1) and (2). What are the possible consequences and/or costs for you, your family, and your employer?


Reading


Writing


Critical Thinking

UNIT OBJECTIVE

After completing this unit, you will show the following competencies by mastering the activities on the Assignment and Job Sheets and by scoring at least 85% on the Written Test.

SPECIFIC OBJECTIVES

Safety and Health

1. Explain the importance of working safely.
2. Identify sources of safe work practices in the concrete industry.
3. State the responsibilities of employees according to OSHA.
4. State guidelines for personal safety.
5. State rules for working safely.
6. Interpret the safety color code.
7. Properly lift an object. (Job Sheet 1)
8. Describe ways of extinguishing a fire.
9. Distinguish among the basic classes of fire.
10. Use a fire extinguisher. (Job Sheet 2)
11. List characteristics of hazardous material.
12. Recognize the dangers from toxic substances on the job.
13. List characteristics and symptoms of contact and allergic dermatitis.
14. List steps for prevention and treatment of contact dermatitis.
15. Interpret the hazard warning system used to classify hazards.
16. State guidelines for working with flammable materials and toxic substances.
17. Use a material safety data sheet. (Assignment Sheet 1)

First Aid

18. Identify sources of accidents and possible injuries in the workplace.
19. Identify types of injuries caused by accidents.
20. State guidelines for responding to accidents and emergencies.
21. Explain the legal aspects of first aid.

22. Complete statements about first-aid kits.

23. State guidelines to reduce disease transmission when providing first aid.

24. State guidelines for providing first aid for cuts.

25. State guidelines for providing first aid for an eye injury.

26. Distinguish among signs and symptoms of sprains and fractures.

27. State guidelines for providing first aid in response to a poisonous or chemical substance.

28. Identify signs and symptoms of a heart attack.

29. Analyze work situations to determine correct first-aid responses. (Assignment Sheet 2)

OBJECTIVE 1

Optional Activities/ Resources in Instructor's Guide

Explain the importance of working safely.

Responsibilities

- You have the responsibility to yourself to prevent personal injury.
- You have a responsibility to your family members to continue providing for them and to keep them safe.
- You have a responsibility to your co-workers to prevent accidents and injuries to them. This means being concerned with their safety and encouraging them to be safety conscious.
- You have a responsibility to your employers to prevent accidents so they are not shorthanded, their job progress is not slowed or stopped, and their insurance rates are not increased, making them less competitive.

Consequences

Accidents and injuries:

- Causes you to be tardy or absent.
- Causes you to be less productive.
- May affect your health and your ability to work.

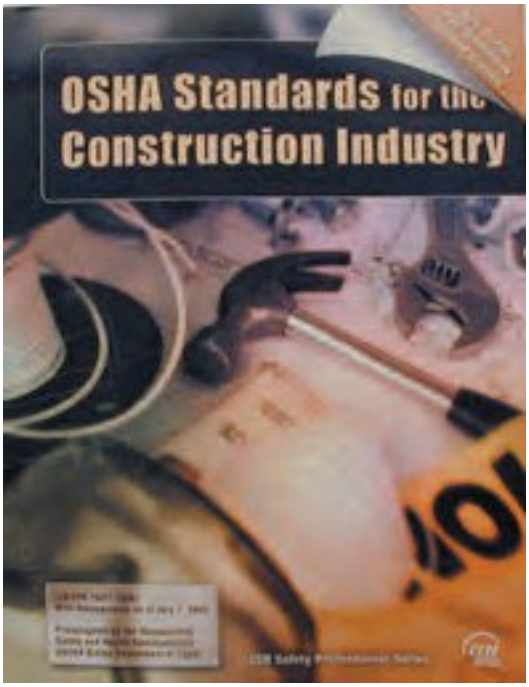
OBJECTIVE 2

Optional Activities/ Resources in Instructor's Guide

Identify sources of safe work practices in the concrete industry.

WORDS YOU SHOULD KNOW

CFR *Code of Federal Regulations*



Ask your instructor for examples of the following.

✔ **NOTE:** In addition to federal agencies, many state and local governments have additional regulations.

- **National Institute for Occupational Safety and Heath (NIOSH)**

- **Mine Safety and Health Administration (MSHA)**

- **Occupational Safety and Health Administration (OSHA)** — An agency of the U.S. Department of Labor that is responsible for worker safety and health protection; develops mandatory job safety and health standards

  EXAMPLES: OSHA standards cover topics such as hazardous materials, personal protective equipment, materials handling and storage, welding, machinery and machine guarding, fire protection, and others. They are covered in CFR 29.

- **Job safety rules**

- **Manufacturers' recommended procedures and precautions**

- **Material Safety Data Sheets**

OBJECTIVE 3

State the responsibilities of employees according to OSHA.

Required Activities/ Resources — Transparencies 1-3

Optional Activities/ Resources in Instructor's Guide

Your instructor will show you transparencies of personal safety equipment.

WORDS YOU SHOULD KNOW

personal protective equipment (PPE)	equipment and clothing designed to protect workers from injuries EXAMPLES: goggles, face shields, gloves, earplugs, safety glasses, safety shoes, etc.

Learn more about OSHA. Visit the federal OSHA web site at <www.osha.gov/>. Click on the "News Room" link, then click on "Publications." In the table of publications to download, look for *All About OSHA* (OSHA 2056).

- Read the OSHA poster (posted at your workplace).

  ✔ **NOTE:** You can also access the poster online in the federal OSHA publications list. Look for the *Job Safety & Health Protection Poster*.

- Comply with all of the OSHA standards that apply to your work and workplace.
- Follow your employer's safety and health rules.
- Wear the personal protective equipment that applies to your work.
- Report any hazardous conditions to your supervisor.
- Report any job-related injury or illness to your employer. Get treatment promptly!
- Cooperate with OSHA compliance officers during any inspection.

OBJECTIVE 4

Optional Activities/ Resources in Instructor's Guide

State guidelines for personal safety.

- Comply with all of the employer's safety rules and posted signs.
- Know the proper way to perform any procedure or use any tool or piece of equipment.
- Never operate, adjust, or repair equipment without proper training.
- Do not use defective tools and equipment. Report them to your supervisor immediately.
- Report all accidents on the job immediately.
- Get first aid immediately!
- Correct or report any unsafe conditions immediately.
- Stay alert to possible hazards all the time.
- Work safely and help others work safely. Never misuse or play around with tools or equipment. Never distract your co-workers while they are working.
- Dress safely at all times:
  - ❑ Wear close-fitting clothing that is appropriate for the job.

- ❑ Remove rings and other jewelry before you start work each day.
- ❑ Confine long hair before using power tools or machines and before working around moving parts.
- ❑ Wear the appropriate personal protective equipment.

- Never carry tools or sharp objects in your pockets.

OBJECTIVE 5

Required Activities/ Resources
— Transparency 4

Optional Activities/ Resources in Instructor's Guide

State rules for working safely.

Your instructor will show you a transparency illustrating proper ladder safety.

General Safety

- Know the location of fire-fighting and first-aid equipment on the job site.
- Be alert and conduct yourself in a safe manner.
- Be conscious of others' safety and encourage others to do the same.
- Report all accidents, regardless of their nature or severity, to the supervisor immediately.
- Be aware of OSHA, NIOSH, MSHA, and job-related safety rules.

Equipment and tool safety

- Obey all safety rules and observe limitations on equipment.
- Maintain all tools in safe working order. Properly store tools when not in use.
- Shut off all power equipment when finished using it.

  ✔ **NOTE:** *Do not* leave equipment until it has stopped completely.

- Operate equipment only after receiving instructions on how to operate it safely.
- Disconnect power from equipment before changing accessories and before performing service or maintenance.
- Use the correct tool for the job.

- Clean chips from grinders and other equipment with a brush.

CAUTION: *Do not* clean equipment with your hands or with a rag; *do not* clean equipment while it is running.

Work-area safety

- Arrange equipment to allow for safe, efficient work practices and ease of cleaning.
- Store materials and supplies safely in their proper places.
- Store tools and accessories safely in cabinets, on racks, or in suitable storage areas.
- Keep work area clear of debris and other hazards.
- Always remove nails from wood before storing or disposing of it.
- Clean floors of obstructions and slippery substances; clean up spills immediately.
- Keep aisles, exits, and traffic areas free of materials and debris.
- Dispose of combustible materials properly.
- Keep brooms, brushes, waste containers, and other housekeeping equipment readily available.

Flammable-liquid safety

- Read the labels on all flammable liquids. Use flammable liquids only in open, well-ventilated areas.
- Be sure that all flammable liquids are marked correctly for storage.
- Store all flammable liquids properly and only in approved safety containers.

  ✔ **NOTE:** Oily rags and flammable materials should be stored in metal containers with self-sealing lids.

- When your clothing is soaked by a flammable liquid, immediately change clothing and clean your body with appropriate cleaner.
- Use flammable liquids only for their intended purpose.

  EXAMPLES; *Never* use gasoline as a cleaner.

- *Do no*t use flammable liquids near fire or flame.

- Always know the location of the appropriate fire extinguisher.
- Stop, drop, and roll to smother a fire; *never* run.

Gasoline-powered-equipment safety

- Prevent contact with hot manifolds and hoses.
- Be sure that equipment is out of gear before starting it.
- Keep the appropriate fire extinguisher near by when starting and operating gasoline-powered equipment.
- *Never* pour gasoline into a fuel tank when the engine is hot or when the engine is running.
- *Do not* operate equipment that is leaking gasoline.
- Stop, drop, and roll to smother a fire; *never* run.

Materials-handling safety

- Avoid contact with your skin.

  EXAMPLE: Use proper gloves.

- Wear the appropriate protective clothing.

  EXAMPLES: Wear close-fitting clothing with snug wristbands, ankle bands, and neckband.

- Wear properly maintained and approved safety equipment.

  EXAMPLES: Respirator, goggles, face shield, hard hat, safety harness

- Use good work practices to reduce dust in the air when handling cement and concrete.

  EXAMPLES: *Do not* shake out cement bags unnecessarily; stand upwind when dumping cement bags; wet concrete before cutting or grinding; *do not* use compressed air to blow cement dust off clothing or work surfaces.

- Have adequate ventilation when using epoxy resins, organic solvents, and other toxic substances.
- *Never* use solvents to clean your skin.
- Immediately remove epoxy, organic solvents, and other substances from skin; use appropriate cleansing agent to remove these substances.

Scaffold safety

- Follow all OSHA regulations.
- Use only approved scaffolding.

CAUTION: *Do not* use a ladder as a makeshift scaffold.

- Inspect scaffolds regularly.
- Install all braces and accessories according to manufacturer's recommendations.
- Install anchors and guy wires on freestanding scaffolds as required.
- Keep scaffolds plumb and level.
- *Do not* overload scaffolds.
- Install safety rails according to OSHA regulations.
- Lock the wheels before climbing rolling scaffolds.
- Check for electrical wires and disengage wires before erecting metal scaffolds nearby.
- *Do not* work on scaffolds during storms or high winds, or when scaffolds are covered with ice or snow.

Fall Protection Systems

- Many lost-time injuries and fatalities in the workplace are the result of falls. Many of those falls could have been prevented or could have resulted in less serious injuries with the use of fall protection systems.

✔ **NOTE:** OSHA has defined a number of areas or activities where fall protection is necessary, including ramps, runways, and other walkways, excavations, hoist areas, holes, formwork and reinforcing steel, leading edge work, unprotected sides and edges, overhand bricklaying and related work, roofing work, precast concrete erection, wall openings, residential construction, and other walking/working surfaces.

- There are several categories of fall protection systems:

  - Surface protection (non-slip flooring)
  - Fixed barriers (handrails, guardrails)
  - Surface opening protection (removable covers, guardrails)
  - Travel restraint systems (safety line and belt)
  - Fall arrest systems (safety line and harness)

  ✔ **NOTE:** Personal fall arrest systems consist of an anchor, connectors, and a body belt or harness. Personal fall arrest systems must be inspected prior to each use for wear damage and other deterioration. Defective components must be removed from service.

Ladder safety

- Fully spread and lock stepladders before using them.

  CAUTION: *Do not* use ladders that are *not* equipped with safety shoes.

- *Do not* use ladders on uneven surfaces.
- *Never* overreach from a ladder.

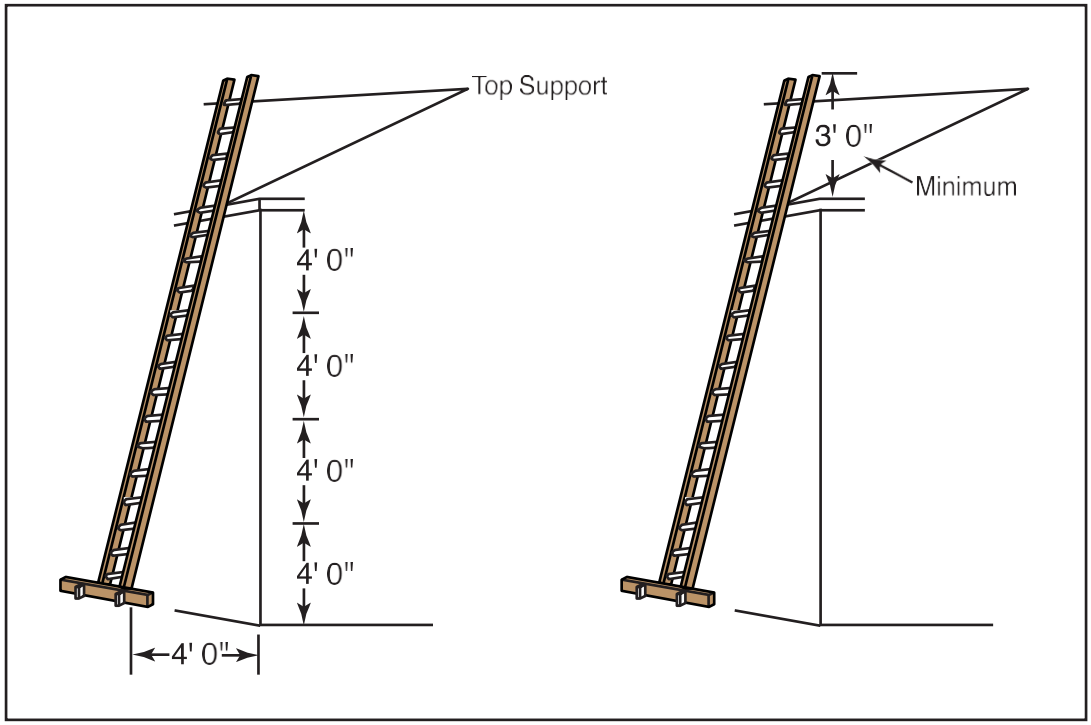
  ✔ **NOTE:** Move the ladder instead.

- *Never* work from the top step of a ladder.
- *Never* use ladders as makeshift scaffolds.
- *Do not* climb a ladder that is occupied by someone else.

  ✔ **NOTE:** Face the ladder when climbing up and down.

- Consult manufacturer's specifications for load-bearing limits.
- *Never* use a metal ladder around wires and conductors.
- Inspect all ladders before use for worn safety shoes, broken or loose rungs, broken extension locks, or other defects.
- Place ladders with approximately one-quarter of their support length away from the vertical edge and at least 3 feet above top support. (Figure 1)

FIGURE 1



- Secure ladders at both top and bottom to prevent deplacement. Brace long ladders at intermediate points to prevent spring.
- Always use a 3-point position when ascending and descending a ladder.
- Remove the the ladder when you are finished using it. Remove and store the ladder at the end of the workday.

OBJECTIVE 6

Optional Activities/ Resources in Instructor's Guide

Interpret the safety color code.

A federal safety color code system was created so that dangers and safety equipment could be easily identified by anyone familiar with the code, even if they see the colors in an unfamiliar place. You might see these colors on the job on posters, signs, labels, and work surfaces (walls, floors, etc.)

Red

- Indicates "DANGER"
- Uses red or predominantly red, with lettering or symbols in a contrasting color

- Identifies:
  - fire protection equipment and its location
  - safety cans or other portable containers of flammable liquids having a flash point at or below 73 degrees Fahrenheit
  - emergency stop bars, stop buttons, and electrical stop switches on machinery, such as on rubber mills, wire blocks, flat work ironers, etc.
  - barricades and temporary obstructions (red lights)

Yellow

- Indicates "CAUTION" and marks PHYSICAL HAZARDS such as striking against, stumbling, falling, tripping, and "caught in between"
- Uses yellow or predominantly yellow, with lettering or symbols in a contrasting color

Orange

- Indicates "WARNING"
- Uses orange or predominantly orange, with lettering or symbols in a contrasting color

Fluorescent Orange or Orange-Red

- Indicates "BIOLOGICAL HAZARD"
- Uses fluorescent orange or orange-red, or predominantly so, with lettering or symbols in a contrasting color

OBJECTIVE 7

Complete Job Sheet 1.

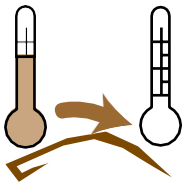
OBJECTIVE 8

Describe ways of extinguishing a fire.

Required Activities/ Resources
— Transparencies 5 and 6

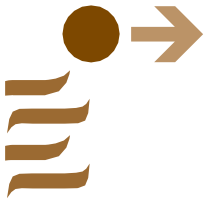
Optional Activities/ Resources in Instructor's Guide

Your instructor will show you transparencies illustrating how to extinguish a fire.



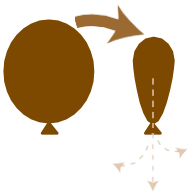
Reducing the temperature

Cooling the fuel until it does not produce enough vapors to burn. This is often done by absorbing the heat with a cooling agent (such as water).



Removing the fuel

Stopping the flow of gases or liquids, or removing the solids that are “feeding” the fire.



Reducing the oxygen

Reducing the amount of oxygen in the fire area, or separating the oxygen from the fuel (such as by “smothering” or “blanketing”).

This method does not work on self-oxidizing materials (materials that produce oxygen) or on certain metals as they are oxidized by carbon dioxide or nitrogen — two common extinguishing agents.

Breaking the chain reaction

Using extinguishing agents that interrupt the flame-producing chemical reaction, putting the fire out. This method is effective only on gas and liquid fuels.

OBJECTIVE 9

Required Activities/ Resources
— Transparencies 7 and 8

Optional Activities/ Resources in Instructor’s Guide

Distinguish among the basic classes of fire.

Your instructor will show you two transparencies about fire extinguishers.

WORDS YOU SHOULD KNOW	
combustible	able to ignite easily and burn very quickly; having a flash point of 100 degrees Fahrenheit or higher
flammable	able to burst into flames; having a flash point of less than 100 degrees Fahrenheit
ignite	to cause something to burn; to catch fire

GREEN

ORDINARY COMBUSTIBLES

Class: A

Examples: Ordinary combustibles, such as wood, paper, cloth
Extinguisher Symbol: Green triangle

RED

FLAMMABLE LIQUIDS

Class: B

Examples: Flammable liquids, such as grease, gasoline, paints, and oil
Extinguisher Symbol: Red square

BLUE

ELECTRICAL EQUIPMENT

Class: C

Examples: Energized electrical equipment, such as motors, switches, computers, breaker panels

✔ **NOTE:** If the equipment is not energized, treat the fire as a Class A or Class B fire.

Extinguisher Symbol: Blue circle

YELLOW

COMBUSTIBLE METALS

Class: D

Examples: Combustible metals, such as titanium and magnesium
Extinguisher Symbol: Yellow star

OBJECTIVE 10

Complete Job Sheet 2.

OBJECTIVE 11

LIst characteristics of hazardous material.

Required Activities/ Resources
— Transparency 9

Optional Activities/ Resources in Instructor's Guide

Your instructor will show you a transparency which shows the characteristics of hazardous material.

WORDS YOU SHOULD KNOW	
MSDS	A detailed information bulletin from a chemical manufacturer or importer that describes the physical and chemical properties of the chemical, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first aid procedures, and control measures

A material is considered *hazardous* if the material safety data sheet (MSDS) or label lists any of these properties or characteristics:

- **corrosive** — capable of dissolving metals and/or burning skin and eyes

- **explosive** — capable of a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature

- **flammable** — capable of being ignited easily

- **reactive** — capable of burning, exploding, or giving off harmful vapors if mixed with air, water, heat, or other materials

  EXAMPLES: explosives, unstable chemicals, oxidizers

- **toxic** — capable of causing illness or death after exposure (even at very low levels)

FIGURE 2

OBJECTIVE 12

Optional Activities/ Resources in Instructor's Guide

Recognize the dangers from toxic substances on the job.

WORDS YOU SHOULD KNOW	
contaminate	to make impure or unclean
silica	the basic component of sand, quartz, and granite
solvent	a liquid that dissolves or is capable of dissolving one or more other substances

Cement masons may come in contact with toxic substances on the job. Ask your instructor for examples of situations when you might contact any of the substances listed below.

- There are thousands of toxic substances. Some of them are:
  - ❑ asbestos
  - ❑ acetone
  - ❑ arsenic
  - ❑ benzene
  - ❑ cadmium
  - ❑ chromates
  - ❑ cobalt
  - ❑ coal dust
  - ❑ coal-tar pitch
  - ❑ chlorine
  - ❑ carbon tetrachloride
  - ❑ carbon monixide
  - ❑ DDT
  - ❑ epoxies
  - ❑ fiberglass
  - ❑ hydrochloric acid
  - ❑ lead compounds
  - ❑ nickel compounds

- ozone
- petroleum oils
- plastic film and polyurethane foam

  ✔ **NOTE:** When these items burn, they give off a deadly gas. They are safe in their solid form.

- sulfuric acid

- Toxic substances can have different forms. They can be solids; liquids; or vapors, mists, fumes, and gases.

  EXAMPLES: solids: asbestos, concrete, fiberglass; liquids: acetone, chlorine, epoxies; vapors, mists, fumes, and gases: carbon monoxide, ozone, smoke

- Toxic substances can enter your body in many ways. They can be:

  - inhaled when you are breathing.

    EXAMPLES: asbestos fibers, silica dust

  - absorbed through your skin.

    EXAMPLES: solvents, some lead compounds

  - ingested while you eat and drink.

    EXAMPLES: Your food and drink can become contaminated from toxic substances on your hands or from dust, fumes, and mists that settle on them from the air.

  - contracted through open cuts and sores.

    EXAMPLES: Toxic substances can enter any open cuts or sores from your hands or from dust, fumes, and mists that settle from the air.

- The effects of toxic substances can range from mild irritation to severe body damage and even death. In some cases, mild irritation can lead to severe damage or death without proper treatment.

  Irritation can include skin rashes, headache, burning eyes, sneezing, and coughing.

  Severe damage to body systems can include shortness of breath, coma, shock, hemorrhage, allergies, and genetic abnormalities.

Death can result from suffocation, cancer, asbestosis, and silicosis.

WARNING: When workers inhale the airborne dust from products that contain silica, over a period of time, silicosis can result. Silicosis scars the lungs. It may take months or years to become obvious. However, silicosis can lead to heart disease, increase the risk of lung cancer, and lead to death. You can help prevent silicosis by using the right tools, following recommended safe work practices, and using the right personal protective equipment.

OBJECTIVE 13

List characteristics and symptoms of contact and allergic dermatitis.

Optional Activities/ Resources in Instructor's Guide

WORDS YOU SHOULD KNOW	
contact (irritant) dermatitis	an inflammation of the skin caused by an irritant coming in direct contact with the skin. Most commonly this irritation is a result of contact with chemical solvents. Irritation is usually localized, where the contact occurred.
allergic contact dermatitis	an allergic response to skin contact with some allergy-causing material (not restricted to parts that came in contact with material) ✔ **NOTE:** A number of substances, including latex gloves, may induce both contact and allergic dermatitis.
latex	milky sap from the rubber tree used in rubber products such as gloves and boots; frequently causes an allergic reaction ✔ **NOTE:** After coming in contact with cement, a cement mason may experience dermatitis symptoms that indicate a reaction to the substance.

- Exposure may cause an immediate irritation, or the dermatitis may take many years to develop.

✔ **NOTE:** Strong irritants, such as acids, alkalis, or solvents cause skin inflammation after a short period of skin contact. Weak irritants, such as water, detergents, coolants, cause inflammation after repeated exposures over a longer time.

- For cement masons, contact dermatitis appears most frequently on the hands and forearms.
- Symptoms of contact dermatitis include skin dryness, redness, heat, itching, pain
- In acute or chronic cases, skin may become red, swollen, weeping; crusty lesions may appear after a few days; skin may be scaly and cracked or thickened

OBJECTIVE 14

Optional Activities/ Resources in Instructor's Guide

List steps for prevention and treatment of contact dermatitis.

✔ **NOTE:** If unsure of the exact cause of the irritation, skin allergy tests may be necessary.

- Contact dermatitis can be very uncomfortable. For cement masons, the threat of irritation is an occupational hazard.
  - **Avoid contact as much as possible.** Use protective barriers, such as gloves, protective clothes, and protective creams. Keep in mind that barrier creams do not provide as much protection as protective clothing

    ✔ **NOTE:** For some cement masons, the rubber gloves and boots worn for protection from the cement may actually cause dermatitis. The latex in the rubber may cause an allergic reaction. This can take the form of rhinitis, conjunctivitis, asthma, or even anaphylactic shock that can lead to death. Researchers believe in some cases the allergies may be related to the powder used on some types of gloves.
- If you must come in contact with cement or any caustic substance that may cause irritation:
  - As soon as symptoms appear on the skin, **seek medical attention**. Left untreated, contact dermatitis symptoms will inevitably worsen. Prevention of contact dermatitis is much less uncomfortable than treatment.
  - **Wash hands with mild soap and water** before and after wearing gloves
  - **Anti-inflammatory creams** may be applied.
  - In severe cases, a physician may prescribe **antihistamines or oral cortisone** to relieve the itching.

OBJECTIVE 15

Required Activities/ Resources
— Transparency 10

Optional Activities/ Resources in Instructor's Guide

Interpret the hazard warning system used to classify hazards.

Your instructor will show you a transparency depicting the hazard warning system.

Read more about hazard communication. You can access the publication "Chemical Hazard Communication" (OSHA 3084) from the web site of the U.S. Department of Labor.

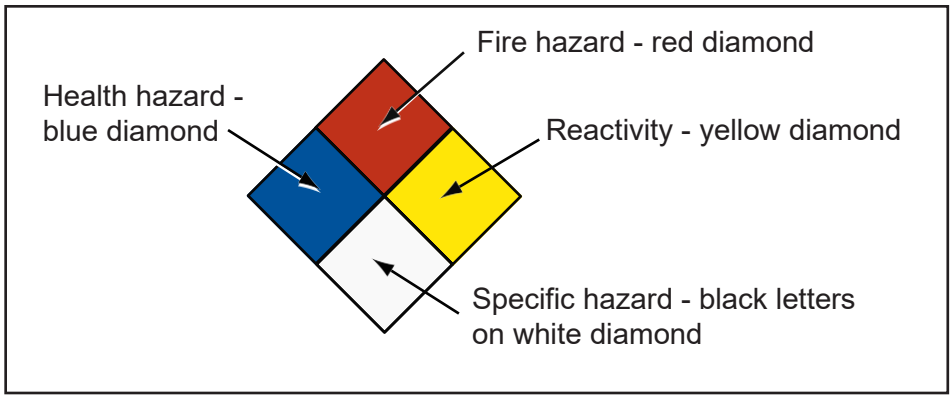
✔ **NOTE:** You might see the hazard warning system on container labels, on buildings and doorways, and on vehicles transporting hazardous materials. It may appear as a colored diamond or rectangle.

- The classification system uses a large diamond made up of four smaller diamonds. Each diamond represents a different characteristic and is represented by a different color.

Table 1

Diamond Location	Characteristic	Diamond Color
Left-hand diamond	Health hazard	Blue
Top diamond	Fire hazard	Red
Right-hand diamond	Reactivity	Yellow
Bottom diamond	Specific hazard	Black on white

FIGURE 3



- Health, fire, and reactivity hazards are rated on a scale of 0-4 with 0 meaning "no hazard" and 4 meaning "severe hazard." The higher the number, the higher the hazard.

Table 2

Rating #	Health Hazard Meaning	Fire Hazard Meaning (Flash Points)	Reactivity Hazard Meaning
4	Deadly	Below 73˚F	May detonate
3	Extreme danger	Below 100˚F	Shock and heat may detonate
2	Hazardous	Below 200˚F	Violent chemical change
1	Slightly hazardous	Above 200˚F	Unstable if heated
0	Normal material	Will not burn	Stable

- Other specific hazards are identified with abbreviations or symbols.

Table 3

Specific Hazard	Abbreviation or Symbol
Oxidizer	OXY
Acid	ACID
Alkali	ALK
Corrosive	COR
Use NO WATER	W
Radiation hazard	

EXAMPLES:

Chemical #1

Chemical 1 presents an extreme danger to your health; it will burn below 200˚F, and it is unstable if heated. Do not use water on this chemical.

Chemical #2

Chemical 2 is a corrosive that is hazardous to your health. It is very flammable with flash point below 100˚F, and it is capable of violent chemical change.

OBJECTIVE 16

Optional Activities/ Resources in Instructor's Guide

State guidelines for working with flammable materials and toxic substances.

- Know where the appropriate MSDSs are kept.
- Read and follow container label directions.
- Handle, store, and dispose of flammable and toxic substances properly. Check the MSDS.
- Use flammable and toxic substances only for their intended purposes.

  ✔ **NOTE:** Have only the amount of the substance that you need to do the job.
- Keep substances that are flammable, corrosive, or reactive away from fire, flame, or sparks.

  WARNING: Do not smoke, cut, or weld near flammable, corrosive, or reactive materials.
- Wear the appropriate personal protective equipment.

  EXAMPLES: chemical splash goggles, safety gloves, respirators, splash aprons, etc.
- Know the locations of eyewash stations, safety showers, spill control stations, and fresh air supplies.
- Make sure the work area is well ventilated. Use fans, exhaust hoods, and approved ventilation systems.
- Avoid inhaling toxic fumes or gases.

  CAUTION: The vapors from flammable and toxic substances, such as solvents and corrosives, can cause serious internal damage if you inhale them!
- Know the location of the proper fire extinguisher for the chemical you are using.

  CAUTION: The wrong extinguisher can actually spread a fire!

OBJECTIVE 17

Complete Assignment Sheet 1.

OBJECTIVE 18

Identify sources of accidents and possible injuries in the workplace.

Optional Activities/ Resources in Instructor's Guide

WORDS YOU SHOULD KNOW	
accident	suddenly occurring, unintentional event that caused injury or property damage
injury	condition that occurs when the body is subjected to an external force

Sources of accidents in the workplace	Possible injuries that may occur
Horseplay	May cause others to fall against sharp objects or moving machinery
Air hose	One blast may rip clothing or skin
Moving parts	May catch fingers or clothing
Loose clothing	May catch in rotating parts
Tools	Sharp edges may puncture skin
Electrical power tools	May cause shock if not grounded
Lack of or improper supporting device under heavy objects	A fall may cause a fatal injury
Lifting heavy objects	May cause severe back injury
Pneumatic tools	High air pressure may seriously damage eyes and skin
Spills on floor	May cause falls

OBJECTIVE 19

Identify types of injuries caused by accidents.

Optional Activities/ Resources in Instructor's Guide

Basic Types of Accident Injuries	
Amputation	Loss of an arm or leg
Burn	Tissue damage caused by fire or heat (thermal), chemicals, electricity or certain radiations
Contusion, bruise	Tissue damage caused by force (blunt trauma); broken blood vessels under the skin cause discoloration (black or blue)
Dislocation	Displacement of a bone or a joint
Electric shock, electrocution	Nerve and muscle damage caused by electricity traveling through the body; may cause burns and death (electrocution) if the heart is stopped by the electricity
Exposure to severe weather (frostbite, heat stroke, heat exhaustion, sunstroke)	Various types of damage to the body caused by extremely high or low temperatures; victim may be unconscious
Foreign body	Entrance of an abnormal substance into the body Examples: Dust particles in the eye, rust fragments under skin, debris in an open wound
Fracture	Broken bone; may be closed (below the skin) or open (protruding through the skin)
Internal injury	Damage to abdominal or pelvic body organs, usually caused by force
Open wound (cut, laceration, puncture, abrasion)	Break in the skin's surface, usually with bleeding involved
Sprain, strain	Twisting or wrenching of a joint (sprain) or a muscle (strain), usually with ligament damage also involved

OBJECTIVE 20

Required Activities/ Resources
— Transparency 11

Optional Activities/ Resources in Instructor's Guide

State guidelines for responding to accidents and emergencies.

Your instructor will show you a transparency that illustrates the location of pressure points throughout the body.

WORDS YOU SHOULD KNOW	
first aid	immediate, temporary care given to the victim of an accident or sudden illness until medical assistance can be obtained

Primary steps: Do these steps first to save a life!

1. Make sure the victim is in a safe place.

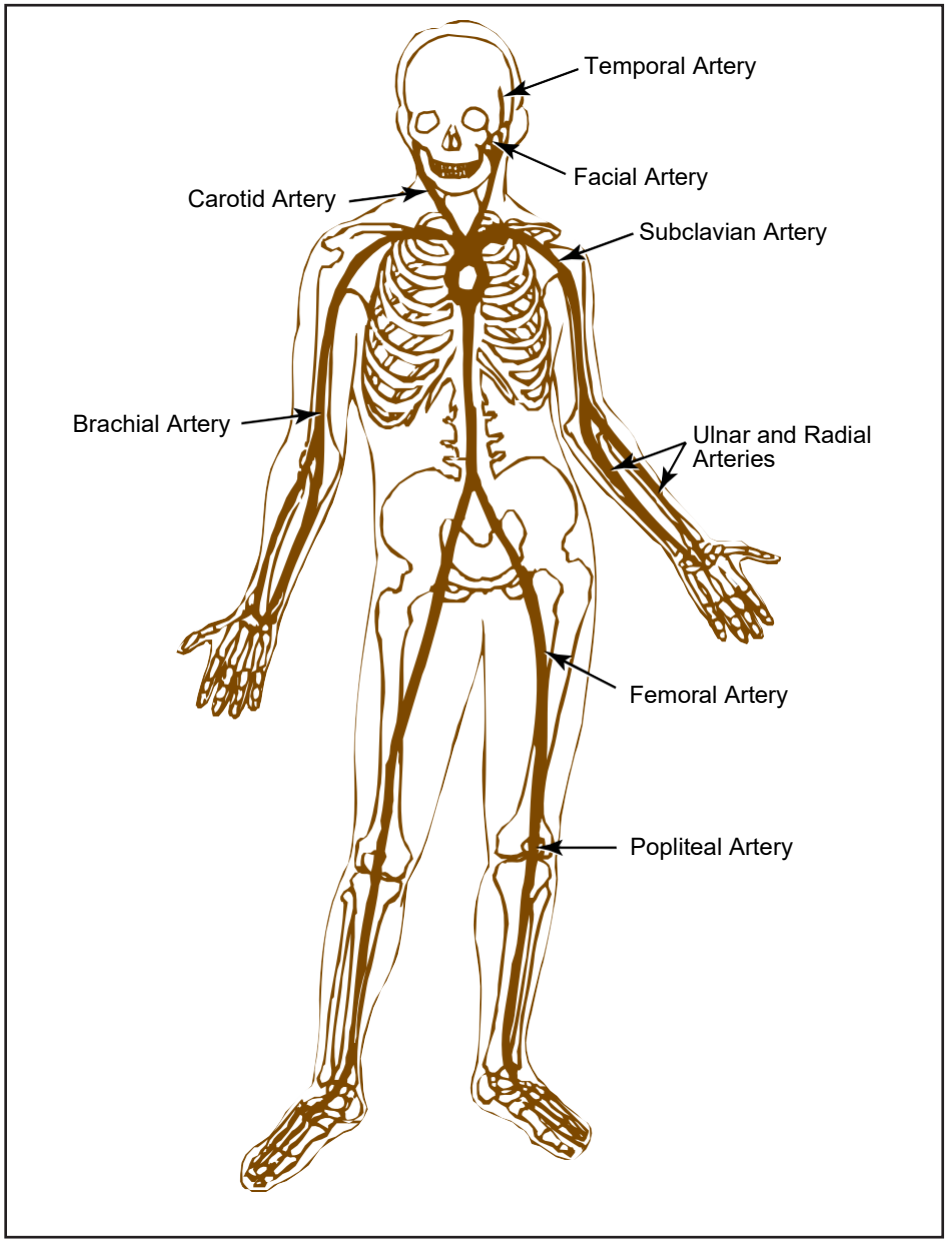
   WARNING: Never move victims unless they are in danger where they are! You could hurt victims even more by moving them.

2. Check the victim's breathing (clear airway) and circulation (pulse on the wrist or side of the neck). If the victim is not breathing, begin CPR if you are trained.

3. Stop any severe bleeding.

   WARNING: Put on first-aid gloves and apply pressure to the wound or to a pressure point. (Figure 4)

FIGURE 4



Secondary steps: Do these steps to help prevent further injury.

1. Call for emergency medical help (or have somebody else make the call) if appropriate:

   - If the victim is unconscious, unusually confused, or seems to be losing consciousness;
   - If the victim has trouble breathing, is breathing in a strange way, or is not breathing;
   - If the victim has chest pain or pressure that will not go away;

- If the victim has pressure or pain in the abdomen that does not go away;
- If the victim is vomiting or passing blood;
- If the victim has seizures, severe headache, or slurred speech;
- If the victim may have been poisoned; or
- If the victim has injuries to the head, neck, or back.

✔ **NOTE:** Call the emergency numbers posted in the workplace (911 is used in many cities), then call for your supervisor.

2. Stay calm and talk to the victim.
3. Ask the victim what happened and where they are hurt.

✔ **NOTE:** If the victim is unconscious but is breathing, check the person from head to toe for injuries.

4. Look for a medical alert bracelet, necklace, or wallet card.
5. Take care of other injuries (broken bones, burns, cuts, etc.).

OBJECTIVE 21

Optional Activities/ Resources in Instructor's Guide

Explain the legal aspects of first aid.

WORDS YOU SHOULD KNOW	
consent	permission to provide care, given by the victim to the rescuer

Under most situations, you are not **legally** obligated to give first aid. However, once you start first aid, you cannot stop (1) until you can turn over the victim's care to others of equal or greater competence (such as trained medical emergency workers or experienced supervisors or co-workers) or (2) until the victim refuses treatment.

You must tell the victim who you are, how much training you have, and how you plan to help. Consent should be obtained from every conscious, mentally competent adult. Oral consent is valid. (Consent should be obtained from the parent or guardian of a child or mentally incompetent adult.) Do not give first aid if the victim refuses to consent.

Consent is implied for giving emergency life-saving first aid to an unconscious victim.

"Good Samaritan" laws protect first aid providers in **most** states if you are acting in good faith and without gross negligence or willful misconduct.

✔ **NOTE:** You cannot force first aid on anyone. A police officer is the only person with the authority to restrain and transport a person against the person's will. Even at the hospital, the victim will have to give permission for medical care.

OBJECTIVE 22

Required Activities/ Resources
— First aid kit

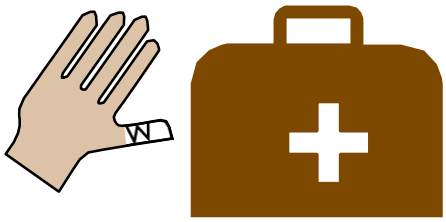
Optional Activities/ Resources in Instructor's Guide

Complete statements about first aid-kits.

ES Ask your instructor to show you an example of a first-aid kit.

- First-aid kits are made for a variety of uses and range from pocket-size to large, industrial sizes.

  ✔ **NOTE:** The type of workplace will help determine the type of first aid kit needed.



- Supplies and materials in first-aid kits should be replaced as needed.
- Industrial first-aid kits are usually painted Federal Safety Green with a cross.
- First-aid kits should contain sterile dressings, antiseptics and other emergency equipment ready to use before an accident happens.

  EXAMPLES: Adhesive bandages for various-sized wounds
  Antiseptic to kill germs and bacteria
  Blood-borne pathogen kit
  Gauze pads, various sizes
  Gauze roller bandages
  Triangular bandages for large wounds and slings
  Scissors
  Tweezers
  Elastic bandages for sprains
  Pain relievers

OBJECTIVE 23

Optional Activities/ Resources in Instructor's Guide

State guidelines to reduce disease transmission when providing first aid.

- Use protective clothing and equipment.

  EXAMPLES: disposable gloves, face shields

- Avoid contact with all body fluids.
- Do not eat or drink when providing first aid.
- Do not touch your mouth, nose, or eyes when providing first aid.
- Wash your hands after providing first aid.

  ✔ **NOTE:** Use soap and hot water when washing your hands.

OBJECTIVE 24

Optional Activities/ Resources in Instructor's Guide

State guidelines for providing first aid for cuts.

WORDS YOU SHOULD KNOW	
bandage	material or tape to cover a dressing or wound
dressing	material or gauze to cover a wound or injury
fainting	a partial or complete loss of consciousness resulting from a reduced flow of blood to the brain

If the cut is small

- Wash the cut.
- Apply dressing and bandage.

If the cut is severe

- Obtain medical attention.
- Put a dressing over the cut and apply pressure.
- Elevate the wound.

CAUTION: Do not elevate the wound if you suspect a broken bone.

- Put a bandage over the dressing.
- If bleeding continues after putting on a dressing and bandage, place an additional dressing and bandage over the first one.
- If bleeding still does not stop after putting on additional dressing and bandages, put pressure on a pressure point (nearby artery).
- Do not remove an object impaled in a wound. Wrap dressings around the object to keep it in place.

  EXAMPLES: glass, metal, knife, rebar, screwdriver
- If a body part is severed, wrap it in sterile gauze, place it in a plastic bag, and put the bag on ice.

  ✔ **NOTE:** The severed part should be taken to the hospital with the victim.
- Wash your hands and any areas that may have contacted a bodily fluid.

WARNING: If you suspect internal bleeding, call emergency medical help immediately. Some signs of internal bleeding include bruised, tender areas of the body (for example, the abdomen); rapid, weak pulse; cool, moist, pale or bluish skin; vomiting; coughing up blood; thirst; becoming faint, drowsy, or unconscious.

OBJECTIVE 25

Optional Activities/ Resources in Instructor's Guide

State guidelines for providing first aid for an eye injury.

✔ **NOTE:** Symptoms of an eye injury include redness of the eye, burning sensation, pain, headache, or overproduction of tears.

For objects or chemicals in the eye that do not cut or penetrate the eye

- Act only within the limits of your training.
- If a chemical caused the injury, check the Material Safety Data Sheet before giving first aid.
- Flush the eye with room temperature water or solution designed for flushing eyes as specified on the Material Safety Data Sheet.
- Use a clean, soft cloth to gently try to remove the object. Do NOT use hard or sharp objects to try to clean the eye.
- Do NOT allow the victim to rub the eyes.

For cuts of the eye or eyelid or objects that penetrate the eye or that cannot be removed using above procedure

- Act only within the limits of your training.
- Get medical help immediately.
- Do NOT wash the eye.
- Do NOT try to remove the object.
- Cover both eyes lightly with a clean dressing.

CAUTION: Both eyes must be covered. If the person moves the uninjured eye, the injured eye will also move, possibly causing more damage.

- Tell the victim to look straight ahead and not to move the eyes.

OBJECTIVE 26

Optional Activities/ Resources in Instructor's Guide

Distinguish among signs and symptoms of sprains and fractures.

WORDS YOU SHOULD KNOW	
closed fracture	broken bone under the skin, with no open wound
fracture	a broken bone
open fracture	a broken bone with an open wound EXAMPLES: a broken bone-end tearing through the skin; machinery breaking through the skin and breaking one or more bones
sprain	injury to the soft tissue surrounding a joint, usually caused by forcing a limb beyond the normal range of a joint

Sprains

- Swelling or pain at the joint
- Discoloration
- Tenderness
- Pain when the person moves

Fractures

- Swelling
- Discoloration
- Obvious deformity

  ✔ **NOTE:** This is true for an open fracture, but not for a closed fracture.

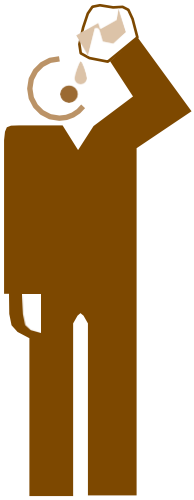
- Pain or tenderness
- Clues provided by the victim:
  - Sound of bone breaking
  - Description of the incident
  - Grating feeling of broken bones rubbing together
  - Signs of abnormal or false motion

OBJECTIVE 27

Optional Activities/ Resources in Instructor's Guide

State guidelines for providing first aid in response to a poisonous or chemical substance.

If swallowed



- Call a Poison Control Center or local emergency number immediately.

  ✔ **NOTE:** The Poison Control Center may tell you to make the victim vomit by giving syrup of ipecac. There are instances when vomiting should NOT be induced (for example, if the victim has swallowed a corrosive substance or a petroleum product). This is why it is important to call a Poison Control Center. Do NOT give the victim anything to eat or drink unless directed by medical professionals.

- Follow the directions given by the poison control center.
- Save the bottle or container.

  ✔ **NOTE:** The label will describe the ingredients and will usually state if the product is poisonous. The label may also give antidotes.

If skin contact

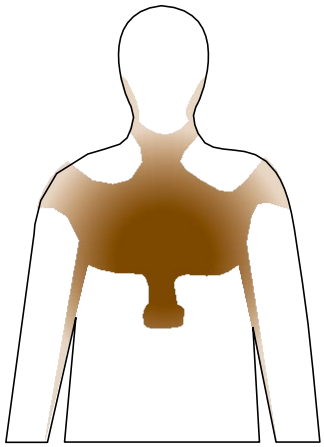
- Remove any contaminated clothing.
- Immediately flush the area with large amounts of water.
- Do not leave the victim alone.
- Call the local emergency number.

OBJECTIVE 28

Optional Activities/ Resources in Instructor's Guide

Identify signs and symptoms of a heart attack.

- Continuing chest pain, usually under the breastbone and often moving to other areas including the arms, shoulders, neck, jaw or back
- Shortness of breath
- Sweating
- Nausea or vomiting



OBJECTIVE 29

Complete Assignment Sheet 2.

Name_____Score_____

OBJECTIVE 17

Use a material safety data sheet.

BASIC SKILLS


Reading


Writing


Critical Thinking


Employability

INTRODUCTION

A material safety data sheet (MSDS) is a detailed information bulletin from a chemical manufacturer or importer. The MSDS describes the physical and chemical properties of the chemical, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first aid procedures, and control measures.

The MSDS is part of a "downstream flow" of information from chemical manufacturers and importers to you, an employee working with a hazardous substance. It works like this:

- The makers or importers of a chemical determine the hazards of each product. They communicate this hazard information, plus any related protective measures, "downstream" to distributors and employers.
- Employers identify the hazardous substances in their workplaces. They are responsible for obtaining the MSDSs and hazard warning labels for those substances (if not provided by the manufacturer, importer, or distributor). The employer uses a written hazard communication program to educate employees about the hazardous substances in the workplace. This program includes MSDSs, labels, and employee training.
- Employees check the MSDS for a hazardous substance before using the substance.

Interpreting the MSDS

The format of an MSDS may vary. However, each MSDS will include the same general sections and information. The following form is from the U.S. Department of Labor. (You can access a copy from the OSHA publications list online.) Each section of the form appears on the left. The explanation of that section appears on the right.

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address *(Number, Street, City, State, and ZIP Code)*	Telephone Number for Information
	Date Prepared
	Signature of Preparer *(optional)*

Section II - Hazard Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%*(optional)*

Heading

Identity — the common and trade name of the hazardous substance, including any synonyms. The identity should be the same as that on the substance's label and CIL.

Section I — Manufacturer's Data

- Name of the substance manufacturer

- Address of the manufacturer
- Telephone numbers of the manufacturer (both an information number and an emergency number)
- Date prepared or revised
- Signature of preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components — the chemical and common name of hazardous ingredients, including all synonyms

PEL — Permissible Exposure Limit

TLV — Threshold Limit Value, the concentration of a chemical to which an employee may be exposed, over a career, without suffering any ill-effects

Other Limits — limits recommended by the manufacturer or importer of the hazardous substance

Percent (%) — the percentage of the total substance accounted for by the hazardous ingredient

Section III - Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	
Solubility in Water			
Appearance and Odor			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

(Reproduce locally) OSHA 174, Sept. 1985

Section III — Physical/Chemical Characteristics

Boiling Point — the temperature at which a liquid changes to a vapor, usually given in degrees Fahrenheit at the sea-level pressure of 14.70 psi (760 millimeters of mercury)

Vapor Pressure — the pressure exerted by a saturated vapor—a vapor at the temperature of the boiling point corresponding to its pressure—above its own liquid, expressed in millimeters of mercury (Hg)

Vapor Density — the ratio of the density of a volume of vapor to the density of an equal volume of air. Air has a vapor density of (1). Vapors with a density less than (1) rise in air, while those with a density greater than (1) sink.

Specific Gravity — the ratio of the weight of a volume of material compared to the weight of an equal volume in water. Water has a specific gravity of (1). Liquids with a specific gravity less than (1) float on water, while those with a specific gravity greater than (1) sink.

Melting Point — the temperature at which a substance melts

Evaporation Rate — the rate at which a substance will vaporize, compared to the rate of vaporization of a known substance such as butyl acetate

Solubility in Water — the amount of a substance that can be dissolved in a given volume of water, usually expressed as milligrams per liter (mg/1)

Appearance and Odor — the appearance and/or odor of the substance

Section IV — Fire and Explosion Hazard Data

Flash Point — the lowest temperature at which a liquid will ignite in the presence of a flame but will not continue to burn; usually expressed in degrees Fahrenheit

✔ **NOTE:** May also indicate the method of determining the flash point since different methods yield different figures.

Flammable (Explosive) Limits — the range over which a vapor mixed with air will flash or explode in the presence of an ignition source

LEL and UEL — the lower explosive limit and upper explosive limit

Extinguishing Media — substances used to control the hazardous material in case of fire (such as water, sand, fog, foam, dry chemical, etc.)

Special Fire Fighting Procedures — the "substance-specific" procedures to follow in case of fire

Unusual Fire/Explosion Hazards — any fire hazards from burning or overheating the hazardous substance, such as chemical reactions, changes in composition, or other hazards in extinguishing the fire

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		
Incompatibility *(Materials to Avoid)*			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Section V — Reactivity Data

Stability — indicates whether a substance is stable or unstable under normal conditions, including any conditions to avoid

Incompatibility — any materials that should not be in contact with the hazardous substance

Hazardous Decomposition/Byproducts — any hazardous substances produced by a hazardous material after burning, reacting with other substances, or other processes

Hazardous Polymerization — the change in energy level when two or more molecules of a substance combine to form a repeating structural unit; includes any conditions to avoid

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Health Hazards *(Acute and Chronic)*			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure			
Medical Conditions Generally Aggravated by Exposure			
Emergency and First Aid Procedures			

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Waste Disposal Method
Precautions to Be taken in Handling and Storing
Other Precautions

Section VI — Health Hazard Data

Route(s) of Entry — whether the substance can be (1) inhaled, (2) absorbed through the skin, or (3) ingested

Health Hazards — any acute (short-term) or chronic (long-term) health hazards associated with the substance

Carcinogenicity — whether the substance may cause cancer, based on ratings such as NTP, IARC Monographs, or OSHA regulations

Signs/Symptoms of Exposure — the most common signs or symptoms of overexposure to the hazardous substance; includes signs and symptoms from both short-term (acute) and long-term (chronic) exposure

Emergency/First Aid Procedures — the "substance-specific" emergency and first aid procedures for treating cases of overexposure

Medical Conditions — any medical conditions that may be aggravated or worsened due to overexposure to the hazardous substance

Section VII — Precautions for Safe Handling and Use

Spill/Release Procedures — methods for controlling or cleaning up spills and leaks (releases), including the necessary equipment and any precautions

Waste Disposal Method — the permissible and prohibited method(s) for disposing of hazardous wastes

Handling/Storing Precautions — any special handling and/or storing precautions

Other Precautions — any other precautions to be taken

Section VIII - Control Measures

Respiratory Proctection *(Specify Type)*		
Ventilation	Local Exhaust	Special
	Mechanical *(General)*	Other

Protective Gloves	Eye Protection
Other Protective Clothing or Equipment	
Work/Hygienic Practices	

* U.S.G.P.O.: 1986 - 491 - 529/45775

Section VIII — Control Measures

Respiratory Protection — the types of required breathing protection when working with the hazardous substance

Ventilation — the types of required ventilation around the hazardous substance, such as local exhaust, mechanical, special, or other forms of ventilation

Protective Gloves — the types of required glove protection when working with the hazardous substance

Eye Protection — the types of required eye protection when working with the hazardous substance

Work/Hygienic Practices — the proper work and hygienic practices to follow when working with the hazardous substance

Other — any other kinds of protective clothing or equipment necessary

EQUIPMENT AND SUPPLIES

- Pen or pencil
- Actual MSDS (provided by your instructor)

INSTRUCTIONS

- Read "Interpreting the MSDS," if you have not read it yet.
- Get an actual MSDS from your instructor.
- Answer the following questions based on the actual MSDS you are given.

1. What is the name of the substance? How is it used in your workplace?

   Name: _____

   Use:

2. How many hazardous ingredients are there? Are you familiar with any of them?

3. Does the substance have a particular appearance and/or odor? If so, please describe it.

4. What could you use to put out a fire involving this substance? Are there any special fire-fighting procedures that apply?

5. Are there any conditions to avoid with this substance? If so, what are they?

6. How can this substance get into your body?

7. Are there any possible short-term health hazards involved with this substance? If so, what are they?

8. Are there any possible long-term health hazards involved with this substance? If so, what are they?

9. Can this substance cause cancer?

10. How would you know if you had too much exposure to this substance?

11. How should you handle or store the substance? Must you use any personal protective equipment? If so, what kinds?

12. How should you dispose of any waste material?

Name_____Score_____

OBJECTIVE 29

Analyze work situations to determine correct first-aid responses.

BASIC SKILLS


Reading


Writing


Critical Thinking


Employability

INTRODUCTION

Quick and effective use of first-aid procedures can save your life or the lives of your co-workers. Even in situations that are not life-threatening, first aid can reduce the seriousness of an injury or prevent it from becoming life-threatening. The first step in any emergency situation is to determine the nature and extent of the injuries so that you can determine the proper treatment.

EQUIPMENT AND SUPPLIES

- Pen or pencil

INSTRUCTIONS

- Read the situations described below.
- Decide what kind of treatment is required. When requested, state the suspected type of injury (problem), then outline the basic emergency first-aid steps (treatment) you would take and the order in which you take them.

1. A co-worker has shot a pin from a powder-actuated fastener through his boot and into his foot. The pin came out, and there is minimal bleeding. However, a few minutes later, he complains of feeling queasy. You notice that he is pale and that his skin feels cold and clammy. After a moment, he says that he feels weak and wants to rest. What is the problem and how should it be treated?

   Problem: _____

   Treatment:

2. One of the cement masons was spraying sealer near an open flame from a gas water heater. The spray ignited in a flash fire. The cement mason has burns over his face, hands, and forearms. He is experiencing intense pain when you arrive. His hands are swollen and covered in blisters. They appear to be wet, almost waxy. His eyebrows are burned away, and his face looks puffy, and it is covered with scattered blisters and dark red patches. What kind of burn does he have, and how do you treat it?

   Problem: _____

   Treatment:

3. A cement mason working near you has run her hand into a power-hand saw blade. Blood is gushing from the wound where the little finger has been severed and from a gash across the palm. When you wipe away the blood, streaks of white from tendons or bones show for a moment and then immediately disappear in the flow of blood. What actions should you take?

   Problem: _____

   Treatment:

4. One of your co-workers screamed when he was plugging a grinder into a gang outlet lying on the slab of a building. There was a popping sound and a puff of smoke. The co-worker fell over and lay motionless on the floor. You turn off the electricity at the fuse box, and rush to the victim. On checking him, you find that his hand is swollen, mottled red. and smoke-scorched. Additionally, you notice that his lips and fingers are a bluish color. You check to see whether he is breathing and find no sign of breath, though there is a weak pulse. What is the problem/ What treatment is required?

Problem: _____

Treatment:

5. While opening a can of epoxy, a cement mason splatters the material into her eyes when the lid flies off suddenly. She grabs her eyes and begins screaming, “It burns!” What should you do?

   Problem: _____

   Treatment:

6. While finishing a roof slab on a hot August day, one of your co-workers begins to complain of being dizzy. You notice that he is sweating heavily and looks pale. Suddenly, he straightens out his left leg and rubs his calf and thigh. He pulls up his pants leg, and you can see the muscles in his leg jerking spasmodically. What is the problem? What treatment should you provide?

   Problem: _____

   Treatment:

7. One of the cement masons on your job was starting a portable, gasoline-powered generator when there was a loud explosion. You look up to see her covered in flames. She begins running toward you, screaming. You knock her down and roll her on the ground to smother the flames. The generator continues to burn, but you have extinguished the flames on the victim's clothing. She is unconscious but breathing. Her pulse is rapid but weak. Her clothing is burned badly. Her legs are covered with ashy white burns surrounded by dark brown and black areas. Charred cloth from her pants is embedded in the burns. There is considerable blistering on her stomach, face, and hands. What is the problem? How should you care for the accident victim?

   Problem: _____

   Treatment:

8. You and a co-worker are working at a remote building site 30 miles away from the nearest medical help. Your co-worker, who is carrying a bag of cement, slips and falls. The bag of cement falls out of his hands and lands on his lower leg. Upon questioning him and examining his leg, you discover that his lower leg is bent at an odd angle, and that there is discoloration, swelling, and considerable pain and tenderness at the injury site. What is the problem, and how would you treat it?

   Problem: _____

   Treatment:

Name _____

OBJECTIVE 7

Properly lift an object.

BASIC SKILLS

Employability

INTRODUCTION

The number one cause of workplace injuries is overexertion. Overexertion can happen when you are moving things. It may happen most often when you lift things. This Job Sheet will show you safe lifting procedures.

EQUIPMENT AND SUPPLIES

- Object to lift (empty box, etc.)

PROCEDURE

Yes No

❑ ❑ 1. Check the load for rough surfaces, nails, splinters, sharp edges, etc. Choose the appropriate personal protective equipment:

- cotton or canvas gloves for light job tasks
- leather or metal-reinforced gloves for rough or abrasive materials or sharp edges

❑ ❑ 2. Size up the load to be sure you can handle it alone. If you can, then place your feet close to the object and about 12 inches apart.

❑ ❑ 3. Bend your knees, grip the object securely, then lift the load straight up. Push with your legs, keep your back straight, and keep the load close to your body.

❑ ❑ 4. Turn with your feet to turn your body after lifting the load into a carrying position.

CAUTION: Turn with your feet. Do not twist at the waist.

❑ ❑ 5. Check your path of travel. Make sure it is clear of people and objects.

Yes No

❑ ❑ 6. Lower the load by bending your knees.

✔ **NOTE:** Store heavy objects at least 12 inches off the floor.

❑ ❑ 7. Keep your fingers out of the way when putting the load down and when moving the load through tight spaces (such as doorways).

SKILL TEST RECORD

PRODUCT EVALUATION

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Key below.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:				
Used proper techniques	4	3	2	1
Load is undamaged	4	3	2	1
Load is stored in its proper location	4	3	2	1
Gloves, if used, are returned to their proper storage	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Profile of Training Mastery, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** — Can perform job with no additional training
3 **Moderately Skilled** — Has performed job during training program; limited additional training may be required
2 **Limited Skill** — Has performed job during training program; additional training is required to develop skill
1 **Unskilled** — Is familiar with process, but is unable to perform job

EVALUATOR'S COMMENTS

Name _____

OBJECTIVE 10

Use a fire extinguisher.

BASIC SKILLS

Critical Thinking

Employability

INTRODUCTION

Portable fire extinguishers offer a "first line" of defense on fires of a limited size. In the workplace, you may have to respond to a fire situation. This Job sheet will show you how to use a portable fire extinguisher.

The label on the fire extinguisher will tell you if you can use that extinguisher on a certain class of fire. The extinguisher may identify the class(es) of fire by a letter symbol and/or a pictorial symbol (Figure 1 and Figure 2).

FIGURE 1

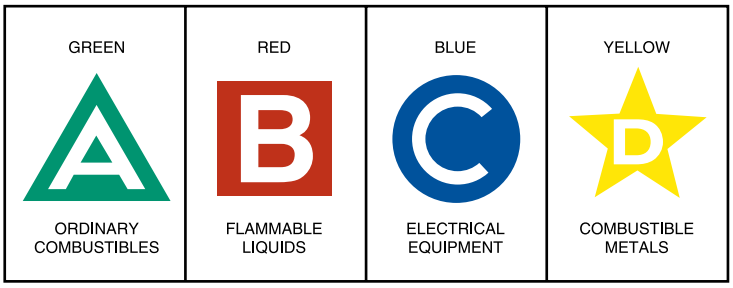
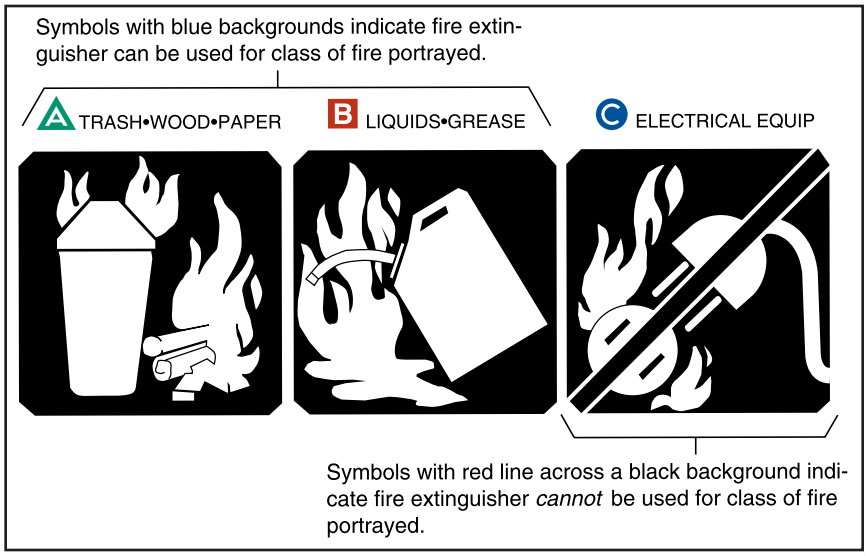


FIGURE 2



EQUIPMENT AND SUPPLIES

- Portable fire extinguisher
- Materials for a mock fire

PROCEDURE

Yes No

✔ **NOTE:** Arrange to perform this Job Sheet with your instructor in advance. Do not use a real fire unless your instructor arranges for a real demonstration with fire department personnel!

❑ ❑ 1. Pull the pin on the fire extinguisher. This unlocks the operating lever. (Some extinguishers have other devices to prevent accidental operation.)

❑ ❑ 2. Aim low. Point the nozzle or hose at the base of the fire.

❑ ❑ 3. Squeeze the lever below the handle. This will discharge the extinguishing agent.

❑ ❑ 4. Sweep from side to side until the flames appear to be out.

❑ ❑ 5. Release the lever to stop the discharge. (Some extinguishers have a button that you press.)

❑ ❑ 6. Check to make sure the fire is out.

PRODUCT EVALUATION

SKILL TEST RECORD

Evaluator note: Rate the student on the following criteria by circling the appropriate numbers. Each criterion must receive a rating of "3" or higher to demonstrate student mastery. (See Key below.) A student who is unable to demonstrate mastery should review the material and submit another product for evaluation.

Criteria:

Fire is extinguished; no hot spots remain	4	3	2	1
Work area is cleaned to its original condition; burned materials are disposed of properly	4	3	2	1
Extinguisher is returned to its proper storage	4	3	2	1

AVERAGE RATING

Evaluator note: To obtain an average rating for the Profile of Training Mastery, total the points in Product Evaluation and divide by the total number of criteria. Circle the rating on the Key.

KEY

4 **Skilled** — Can perform job with no additional training
3 **Moderately Skilled** — Has performed job during training program; limited additional training may be required
2 **Limited Skill** — Has performed job during training program; additional training is required to develop skill
1 **Unskilled** — Is familiar with process, but is unable to perform job

EVALUATOR'S COMMENTS